REMARKS

As of the filing of the present reply, claims 1, 3-5, 7-21, 23-28, and 30 were pending in the above-identified US Patent Application.

In the preceding Office Action, the Examiner allowed claims 27, 28 and 30, and deemed claims 3, 13, 14, 24 and 26 to recite allowable subject matter, but rejected independent claims 1, 9, 11, 16, and 21 and their dependent claims 4, 5, 7, 8, 10, 12, 13, 15, 17-20, 23 and 25.[1] Specifically:

Independent claim 9 and its dependent claim 10 were rejected under 35 USC §102 as anticipated by U.S. Published Patent Application No. 2004/0039870 to Roohparvar;

Independent claims 1, 9 and 21 and their dependent claims 4, 5, 7, 8, and 23 were rejected under 35 USC §102 as anticipated by U.S. Published Patent Application No. 2004/0165472 to Yamazaki;

Independent claim 9 and its dependent claim 10 were rejected under 35 USC §102 as anticipated by U.S. Patent No. 6,023,745 to Lu; and

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[1] Claims 28 and 30 were identified as being "allowed," yet both depend from rejected parent claims (independent claims 21 and 16, respectively). Therefore, Applicants presume that claims 28 and 30 are not allowed *per se*, but rather are deemed to recite allowable subject matter.

Independent claim 9 was rejected under 35 USC §102 as anticipated by U.S. Patent No. 5,835,965 to Taylor et al. (Taylor).

Applicants respectfully request reconsideration for the following reasons.

Regarding the rejection of claims 9 and 10 based on Roohparvar, Roohparvar was cited as disclosing a semiconductor (memory) device comprising a bank with multiple pages, and means 170 for opening pages on the bank. However, only one bank of Roohparvar is open at any time in any bank.

> An ACTIVE command is used to open (or activate) a row in a particular array bank for subsequent access. A selected row generally remains active until the next ACTIVE command.
>
> Roohparvar at paragraph [0024].

Applicants believe this clearly describes the standard functionality of any memory device wherein a row (in any bank) is opened by an ACTIVE command, but has to be closed before the next ACTIVE command is given to

a different row in the same bank. In other words, there is never more than one row open on any given bank. Because by definition a page comprises multiple rows, Roohparvar does not disclose "means for keeping multiple pages open on the bank" as required by independent claim 9, and Applicants therefore respectfully request withdrawal of the rejection of independent claim 9 and its dependent claim 10 under 35 USC §102 based on Roohparvar.

Regarding the rejection of independent claim 9 based on Yamazaki,[2] Yamazaki was cited for disclosing a semiconductor device comprising a bank with multiple pages, and means for keeping multiple pages open on the bank. Yamazaki states at [0087]:

> When read operation instructing signal RE and page mode operation instructing signal PM are both set to the H level and the other instructing signals WE, REF and PC are set to the L level, a page mode read command (page read command) REPM is designated. When page mode read

[2] This explanation for the rejection based on Yamazaki was described as "[r]egarding claims 9, 19," yet dependent claim 19 was not listed as being rejected based on Yamazaki. Because claim 19 depends from claim 11 (which was not rejected on the basis of Yamazaki) and not claim 9, Applicants interpret the inclusion of claim 19 in this rejection as a typographical error.

> command REPM is designated, the read operation for reading data within this clock cycle is performed. Even after completion of this read operation, the opened page is maintained open. The column-related circuitry returns back to the inactive state after the data reading.

Applicants believe the above paragraph from Yamazaki describes standard open-page policy, that is, instead of immediately closing a page after any read, the page is maintained open for further read accesses that may occur because of the locality of data, meaning that related data are often written to the same page. This is in contrast to a close-page policy that is often used in situations where totally random accesses occur and where an open page policy would incur an additional penalty of having to close the page or row if data from a different page are requested. However, nowhere in this paragraph is there any reference to keeping multiple pages open on the same bank.

Regarding the rejection of independent claims 1, 11, 16 and 21 based on Yamazaki,[3] Yamazaki was cited for disclosing a semiconductor

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[3] This explanation for the rejection based on Yamazaki was described as "[r]egarding claims 1, 11, 16, 21," yet independent claims 11 and 16 were not originally listed as being rejected based on Yamazaki.

memory device comprising a bank with multiple pages, a method/means for keeping multiple pages open on the bank, and posting a precharge command immediately after a command ([0088], read operation) for a first access of one of the multiple pages in anticipation of a subsequent access of the page ([0089]).

Yamazaki at paragraph [0088] states:

> When read operation signal RE and page close instructing signal PC are set to the H level and the other instructing signals WE, REF and PM are set to the L level, a read command with autoprecharge, i.e. autoprecharge-read command REPC is set.

Applicants believe this means that after any row is opened and a close page policy is used, a read-autoprecharge command can be issued, meaning that together with the column address, a modified read command is issued, which means that the page is closed automatically after the initial data access. In other words, no page is open past any single read access. There is no indication whatsoever that at any time multiple pages could be open, nor would this be technically feasible in the semiconductor memory device described by Yamazaki. There is also no reference to any instance of multiple

open pages in paragraph [0089], which was also cited by the Examiner.

Finally, regarding claim 23, paragraphs [0087] and [0088] of Yamazaki disclose the open and close page policies using the read-autoprecharge command, which is a standard feature in DRAM technology. The statement "within one clock cycle" in paragraph [0086] underscores the lack of posting a precharge, which is the essence of the claimed invention.

In view of the above, Applicants respectfully request withdrawal of the rejection of independent claims 1, 9 ,11, 16 and 21 and their dependent claims under 35 USC §102 based on Yamazaki.

Regarding the rejection of independent claim 9 and its dependent claim 10 based on Lu, the Abstract of Lu was cited as disclosing a semiconductor memory device comprising a bank with multiple pages, and means for keeping multiple pages open on the bank. The Abstract of Lu states:

> The DRAM of the present invention allows dual simultaneous memory access into a memory divided into a plurality of arrays (e.g. 48 arrays). Each array of the DRAM contains a plurality of rows (e.g. 256). Each row of the

> DRAM contains storage for a certain amount of data bits (e.g. 1024). The DRAM in one configuration contains 1.5 Megabytes of memory. During a dual bank DRAM access, the system allows a first access for preopening a row (e.g. a page) of DRAM within a First array while simultaneously allowing a second access for reading/writing data to an opened row of another array aside from the first array.

Lu at column 2, lines 1-3, further describes the row access strobe mechanism that is used to select/specify one of the 128 rows for access. In other words, Lu describes a multi-array memory in which one array can have one row open and another array can have a row open. This is very different from having multiple rows open on the same bank; in fact, the open rows are not even on the same array in Lu.

Applicants therefore also respectfully request withdrawal of the rejection of independent claim 9 and its dependent claim 10 under 35 USC §102 based on Lu.

Finally, regarding the rejection of independent claim 9 based on Taylor, Taylor at column 8, lines 45-47, describes a burst pointer that monitors the number and addresses of column accesses to determine when a last

location (i.e. column address) can be accessed in a given page. This has nothing to do with multiple open pages on the same bank. Likewise, in column 9, lines 60-61, Taylor refers to multiple column addresses within the same page, rather than multiple pages on a bank.

Applicants therefore respectfully request withdrawal of the rejection of claim 9 under 35 USC §102 based on Taylor.

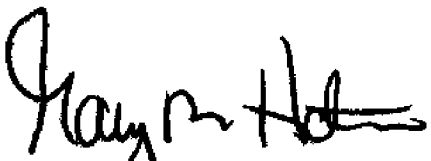
Closing

In view of the above, Applicants believe that the claims define patentable novelty over all the references, alone or in combination, of record. It is therefore respectfully requested that this patent application be given favorable reconsideration.

Though the above remarks are primarily limited to certain limitations of the claims, Applicants believe that other limitations of the claims provide additional grounds of patentability over the cited references, and Applicants reserve the right to present these additional grounds at a later time if necessary.

Should the Examiner have any questions with respect to any matter now of record, Applicants' representative may be reached at (219) 462-4999.

Respectfully submitted,



Gary M. Hartman
Reg. No. 33,898

May 1, 2008
Hartman & Hartman, P.C.
Valparaiso, Indiana 46383
TEL.: (219) 462-4999
FAX: (219) 464-1166